Summary
Draft Water Management Plan for the South Saskatchewan River Basin

This plan reflects the balance that the Government of Alberta is striving to achieve for Albertans between protecting the aquatic environment of the SSRB's main rivers, and the water diversion and consumption that contributes to economic prosperity in southern Alberta. The plan was prepared as a result of receiving Albertans' views on the direction water management should take in the SSRB.

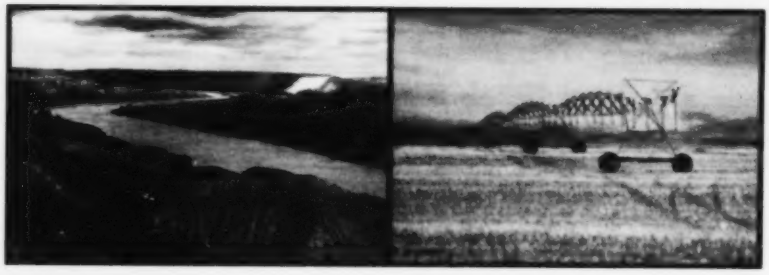
The plan will provide the foundation for future watershed management planning of sub-basins in the SSRB.

Recommendations

The recommendations made in the plan represent advice to the Minister of Environment and the Director, who are responsible for making decisions under the Water Act. The provisions described in the plan are other actions to be taken by Alberta Environment (AENV).

Only the Phase One components of the draft plan have been approved by Cabinet. Once approved by the Lieutenant Governor-in-Council, this 'NEW' plan will be an "Approved Water Management Plan" as defined by the Water Act.

...striving for a balance between protecting the aquatic environment and water consumption in southern Alberta...



The principal recommendation contained in the plan is that:

- Alberta Environment stop accepting applications for new water allocations in the Bow, Oldman and South Saskatchewan River sub-basins until the Minister of Environment specifies how water not currently allocated should be used (in other words, create a Crown reservation of water).

Other recommendations and provisions included are:

- Alberta Environment set the total amount of water available for allocation in the Red Deer River sub-basin at 600,000,000 cubic meters, an amount which would be subject to re-evaluation from time to time with new information on the aquatic environment and the reliability of licences.

Alberta Environment recognizes and accepts that the limits for water allocations are being reached in the Bow, Oldman, and South Saskatchewan River sub-basins.

- Alberta Environment continue to consider the SSRB as a whole in order to meet the Master Agreement on Apportionment. A committee consisting of sub-basin representatives will be formed to provide advice to AENV on how best to meet apportionment on an operational basis.

- Alberta Environment establish the following Water Conservation Objectives (WCOs):

  - Bow (Bearspaw Dam to Bassano Dam), Oldman, St. Mary, Belly, and Waterton Rivers WCOs:
    A rate of flow 10 per cent greater than the existing instream objectives (Bow and Oldman rivers) or 10 per cent greater than the existing WCOs for the St. Mary, Belly, and Waterton Rivers to improve the aquatic environment and riparian health.

  - Bow River (Bassano Dam to mouth) WCO:
    A rate of flow of 17.1 cms *(cubic meters per second)* to improve the aquatic environment and riparian health.

  - South Saskatchewan River WCO:
    A rate of flow of 42.5 cms to improve the aquatic environment and riparian health.

  - Red Deer River WCO:
    Upstream of confluence with Blindman River:
    - A rate of flow that is 45% of the natural rate of flow, or 16 cms, whichever is greater at any point in time, for all future licences and licences with a retrofit provision.

    Downstream of confluence with Blindman River:
    - For future licences for withdrawals from November to March, inclusive: A rate of flow that is 45% of the natural rate of flow, or 16 cms, whichever is greater at any point in time.
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    - For licences with a retrofit provision: A rate of flow that is 45% of the natural rate of flow, or 10 cms, whichever is greater at any point in time.

This WCO is designed to permit water diversion while setting a limit on negative impacts on the aquatic environment.

- Alberta Environment apply for licences to permit water to be held for WCOs or protection of the aquatic environment in order to take opportunities to secure water for these purposes.

- The South Saskatchewan Basin Water Allocation Regulation (1991) be repealed.

- The Director is authorized to consider applications for transfers of water allocations.

- The Director is authorized to withhold up to 10 per cent of the volume of water being transferred if it is considered to be in the public interest to protect the aquatic environment or to implement a WCO.

The Water for Life: Alberta's Strategy for Sustainability is the Government of Alberta's approach to water management. It outlines a comprehensive set of strategies and actions that will ensure Albertans have safe, secure drinking water; healthy aquatic ecosystems; and a reliable supply for a sustainable economy.

- The Director shall consider the matters and factors provided in this plan in making decisions on applications for licences, preliminary certificates, approvals, or transfers of an allocation of water.

- To improve the efficiency, effectiveness and productivity of water use AENV will act in three broad water management areas:

  - continue to improve water management and administration of water allocations,

  - support the development of water markets for transfers to accommodate re-distribution of water already allocated, and

  - encourage improvements in water conservation by water users.

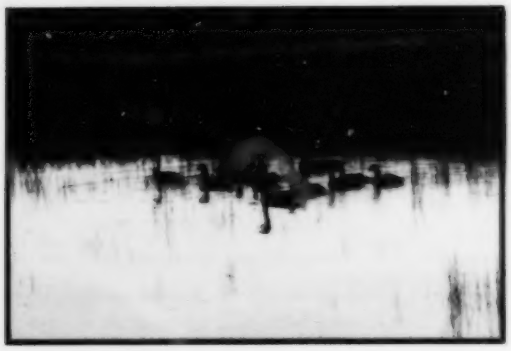
...Improve the efficiency, effectiveness and productivity of water use...

- In the Bow, Oldman, and South Saskatchewan River sub-basins, opportunities to restore flows to meet WCOs should be taken. Licence holders will be encouraged to take voluntary action to help restore flows.

- Watershed Planning and Advisory Councils (WPACs) are encouraged to consider the priorities in their watersheds and undertake future watershed management planning with this water management plan as a foundation. A number of priorities are suggested.

- No licence will be cancelled for the sole reason of accomplishing recommended outcomes of this plan. Normal administration of water allocations by Alberta Environment will continue, which may involve canceling licences on grounds under the Water Act.

For More Information



Copies of the plan and background documents can be found at www.environment.gov.ab.ca
For additional information, contact Alberta Environment at (403) 297-6250 (toll-free in Alberta by calling 310-0000).

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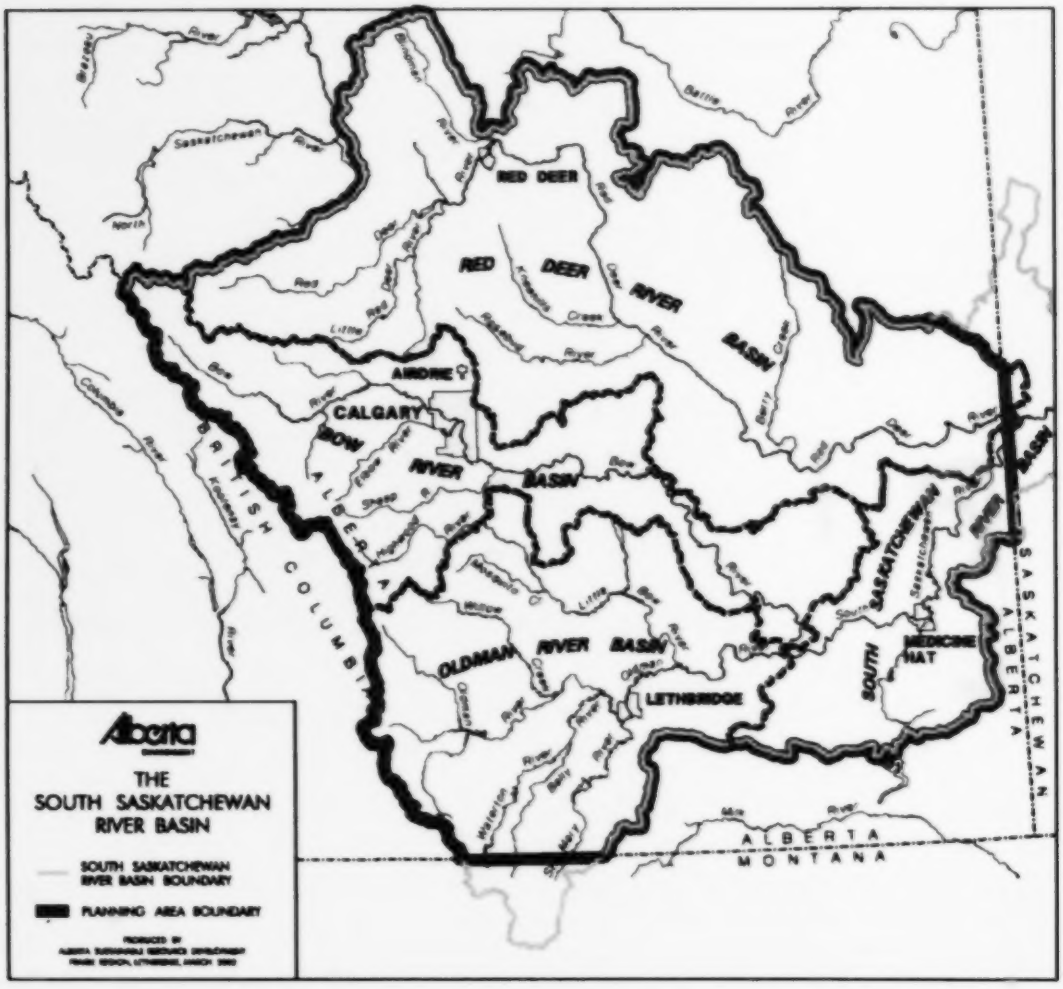

106-02203/

Questions and Answers on the Draft South Saskatchewan River Basin Water Management Plan

1. What does the draft plan mean for southern Alberta?

   We are entering a new age of water awareness and increased appreciation of the importance and value of water. Future planning cycles can be expected to lead to even greater improvements in water management, both for human needs and the needs of aquatic and riparian ecosystems.

2. If Alberta Environment does not accept applications for new allocations in the Bow, Oldman and South Saskatchewan River sub-basins, how will municipalities, industries and others get the water they need?

   There are opportunities to make the best use of the large amount of water that has already been allocated in these sub-basins:

   - Improvements and innovations by Alberta Environment in water administration and legislation to match allocations with needs.
   - Market mechanisms such as water allocation transfers to encourage re-distribution of the water already allocated through voluntary actions by licence holders.
   - Innovation and creativity of water users to improve water use efficiency.
   - Improvements in water quality so less water is required in rivers for waste assimilation, thereby making this water available for consumption.

   The Crown Reservation, ordered by the Minister of Environment, will specify some final amount of water is available for some specific purposes.

3. What are some of the expected benefits of a decision to no longer accept applications for water allocations in the sub-basins of the Bow, Oldman and South Saskatchewan River sub-basins?

   - Water allocation transfers will be more routinely used to obtain reliable water supplies.
   - The potential value of a water allocation transfer will provide an incentive to improve water use efficiency.
   - Innovations in water use efficiency will be encouraged.
   - With a limit on the amount of water allocated, water sharing in times of shortage will remain a viable option.
   - Future demand on the Red Deer River to contribute water to the apportionment agreement with Saskatchewan will not increase as much as it would otherwise.
   - Opportunities to meet the water needs of the First Nations will remain.

4. Why does the plan not specify the types of uses for any future allocations?

   This was outside the scope of the planning process. Its main goals were to recommend how much water should remain in the rivers, and, conversely, how much water could be allocated. The Crown Reservation to be established for the Bow, Oldman and South Saskatchewan River sub-basins will specify types of uses for some quantity of water.

5. What is a Crown Reservation?

   A Crown Reservation is a tool provided by s. 35 of the *Water Act*. The Minister of Environment can specify the purposes for which any unallocated water can be used. The priority of any future allocation of the reserved water can be prescribed, although it cannot have a date earlier than the date of the reservation.

6. How will the Crown Reservation be developed? Who will be involved?

   Alberta Environment will lead the process. The Bow River Basin Council, the Oldman Watershed Council and the Watershed Planning and Advisory Council for the Red Deer River sub-basin will be asked for advice. The Treaty Seven First Nations will also be asked for advice. While the Crown Reservation is being developed Alberta Environment will not accept applications for new licences. Applications for transfers of water allocations will be accepted. Once the reservation is in place, applications for licences will be accepted only for the purposes and volumes specified in the Crown Reservation.

7. What relationship does the SSRB plan have with other water management plans in the basin?

   The SSRB Water Management Plan is the most senior water management plan for the SSRB. All other water management plans in the basin must conform.

8. Why is this plan only giving recommendations to the Minister and the Director?

   The *Water Act* requires the Minister make recommendations in an Approved Water Management Plan. The Act also identifies that only certain people have the authority to make certain decisions, such as the establishment of water conservation objectives.

9. How was the figure of a 10 per cent increase over existing instream objectives and water conservation objectives determined for the water conservation objectives for the St. Mary, Belly, Waterton and Oldman Rivers and parts of the Bow River?

   The 10 per cent increase in rate of flow over existing instream objectives and water conservation objectives is intended as an interim value to permit some flow restoration to begin. It is important to start, even though the final target is not determined. Determining the final target will require scientific research to have a better understanding of the aquatic environment.

10. How was the figure of 600,000 cubic decameters for the maximum total allocation in the Red Deer River sub-basin arrived at?
(one cubic decameter = 1,000 cubic meters)

This figure is the sum of:

- Existing licences, pending applications and future projections.
- Allowance for future irrigation demand to reach the area specified (39,271 hectares) in the South Saskatchewan Basin Water Allocation Regulation for the Red Deer River sub-basin.

The figure should be re-evaluated periodically as new information become available.

11. The plan states a maximum total allocation for the Red Deer River will set a limit on impacts on the aquatic environment. What does this mean?

The maximum allocation for the Red Deer River of 600,000 cubic decameters is approximately 38 per cent of the median annual natural discharge from the river. The present degree of allocation in the Bow and Oldman River sub-basins is 68 and 70 percent respectively. While this is not a perfect indicator, it can be expected that over the long-term the degree of impact on the Red Deer River will be less than that presently observed for the Bow and Oldman Rivers. *(one cubic decameter = 1,000 cubic meters)*

12. How was the figure of 45% of the natural rate of flow determined for part of the recommended water conservation objective for the Red Deer River?

This figure equates to the recommendation of the Red Deer River Basin Advisory Committee of 50% of the instream flow needs rate of flow. The switch from percentage of the instream flow need rate of flow to a percentage of the natural rate of flow was made because the Steering Committee believes it will help people to visualize and understand the WCO.

The Red Deer River Basin Advisory Committee arrived at its recommendation after considering the amount of water it believed should be available for economic development.

13. How were the figures of 10 and 16 cubic meters per second (cms) determined as the minimum rates of flow components of the Red Deer River WCO?

The figure of 16 cms is a rate of flow necessary to ensure water quality guidelines are met during the winter months based on current data on effluent loadings and the need for dilution flows. This minimum flow during the winter has the implication that new licences for year round diversion will require storage. Winter flows are usually less than 16 cms so water will likely not be available for diversion then.

The figure of 10 cms is a rate of flow determined by computer simulations to permit the same amount of water to be available for economic development as recommended by the Red Deer River Basin Advisory Committee.

14. Why doesn't this plan address water quality?

Water quantity and allocations issues were the most pressing and needed to be addressed immediately. Also, it is necessary to know how much water will be in the rivers to address the water quality factors that are strongly affected by flow: dissolved oxygen and temperature. These factors were considered in the determination of the instream flow needs for the aquatic environment and also in the development of the recommendations for water conservation objectives.

Water quality, particularly as affected by non-point sources, can be expected to be a priority in the watershed management planning to be carried out by the Watershed Planning and Advisory Councils.

15. What does the plan mean by "groundwater that is hydraulically directly connected to surface water is subject to this plan?" Isn't all groundwater connected to surface water?

If subsurface water responds quickly to changes in nearby surface water it is likely considered to be surface water. Water chemistry can also be a factor. The best example is a well beside a river. If the water level in the well rises and falls in correlation with the river, this indicates the river and well water is the same. There are varying degrees of connection between surface and groundwater, and research is required to improve knowledge in this area.

16. Why doesn't the plan stipulate the Director always withhold 10 per cent for holdbacks?

The 10 per cent holdback is a discretionary decision for the Director to make. This allows the Director to assess each transfer application individually and determine what, if any, amount of holdback (up to 10 per cent) is needed.

Recent experience with transfers has shown there are times when the holdback is not justified. For example, if an allocation is being transferred a significant distance downstream, the allocation remains in the river longer to the benefit of the environment.

17. Who decided who should be on the basin advisory committees?

Alberta Environment extended invitations to all municipalities and First Nations, and to all industries and organizations believed or known to have an interest in water management. As a result representatives came forward from municipalities, industries, irrigation agriculture, non-irrigation agriculture, and environmental and recreation groups.

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Errata

Draft Water Management Plan for the South Saskatchewan River Basin

(18 October 2005 Draft)

Revisions are shown in ***bold italics***

Page 8

Recommended Water Conservation Objectives

- **Red Deer River WCO:**

  Upstream of confluence with Blindman River ***to Dickson Dam***:
  - A rate of flow that is 45% of the natural rate of flow, or 16 cms, whichever is greater at any point in time, for all future licences and licences with a retrofit provision.

  Downstream of confluence with Blindman River:
  - For future licences for withdrawals from November to March, inclusive:
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  - For future licences for withdrawals from April to October, inclusive:
    A rate of flow that is 45% of the natural rate of flow, or 10 cms, whichever is greater at any point in time.

  - For licences with a retrofit provision:
    A rate of flow that is 45% of the natural rate of flow, or 10 cms, whichever is greater at any point in time.

  (Any applications received or licences issued after May 1, 2005 should be subject to the foregoing.)

  (No changes to remainder of section.)

Page 9

Recommended Water Conservation Objectives

- Bow (Bearspaw Dam to Bassano Dam), Oldman, St. Mary, Belly and Waterton River WCOs:
  - Rate of flow 10 per cent greater than the existing instream objectives (Bow and Oldman Rivers) or 10 per cent greater than the existing WCOs for the St. Mary, Belly and Waterton Rivers. (See Appendix 'E' for existing instream objectives and WCOs.)
  - ***For the Bow and Oldman Rivers this WCO should apply to any licences issued for applications received after May 1, 2005.***

  (No changes to remainder of section.)

DRAFT

*(Approved) Water Management Plan

for the

South Saskatchewan River Basin

in Alberta

Alberta Environment

18 October 2005

*Only the Phase One components of this draft plan are presently approved. Once approved by the Lieutenant Governor-in-Council, this plan will be an "Approved Water Management Plan" as defined by the *Water Act*.

Table of Contents

Executive Summary 1

A. Background 4

1. Introduction 4

2. Context for the Plan and Issues Considered 6

B. Recommendations and Provisions 7

1. Place Water Resource Limits on the Bow, Oldman, and South Saskatchewan River Sub-basin 7

2. Place Water Resource Limits on the Red River Sub-basin 7

3. Establish Water Conservation Objectives (WCOs) 8

4. Repeal the *South Saskatchewan Basin Water Allocation Regulation* (1991) . 10

5. SSRB Sub-basins Continue to be Treated as a Whole to Meet the *Master Agreement on Apportionment* (1969) 10

6. Use of Water Allocation Transfers and Water Conservation Holdbacks and Matters and Factors that Must be Considered When Making Decisions 10

- Water Allocation Transfers 10
- Water Conservation Holdbacks 11
- Matters and Factors that must be considered in making decisions on applications for Licences, Preliminary Certificates, and Approvals 12

7. Water Management Strategies to be Developed 14

- Water Demand and Consumption 14
- The Aquatic Environment 15

C. Other Items 16

1. Future Watershed Management Planning Priorities 16

2. Performance Monitoring Requirements 16

3. First Nations Involvement 16

4. Schedule for Review of the Plan 17

D. References 18

E. Glossary 20

Appendices

A. Public Consultation Process 26

B. Relationship of the Water Management Plan to other Planning Initiatives 28

C. Issues Not Considered 35

D. Summary of Information Assembled 36

E. Existing Instream Objectives and Water Conservation Objectives 38

List of figures

Figure 1: The Planning Area 5

List of Tables

Table 1: Matters and factors that must be considered in making decisions on applications for a transfer of an allocation of water under a licence in the SSRB 13

Table 2: Matters and factors that must be considered in making decisions on applications for licences, preliminary certificates or approvals affecting surface water in the SSRB 14

EXECUTIVE SUMMARY

This is the draft (Approved[1]) Water Management Plan under the *Water Act* for the South Saskatchewan River Basin (SSRB) in Alberta. The draft plan is a consolidation of the Phase One Approved Water Management Plan for the SSRB conducted in 2002, and recommendations from phase two of the planning process.

This plan reflects the balance that the Government of Alberta is striving to achieve for Albertans between protecting the aquatic environment of the SSRB's main rivers, and the water diversion and consumption that contributes to economic prosperity in southern Alberta. The plan was prepared as a result of receiving Albertans' views on the direction water management should take in the SSRB.

This plan will provide the foundation for future watershed management planning of sub-basins in the SSRB.

The recommendations made in this plan represent advice to the Minister of Environment and the Director, who are responsible for making decisions under the *Water Act*. The provisions described in this plan are other actions to be taken by Alberta Environment (AENV).

AENV recognizes and accepts that the limits for water allocations are being reached in the Bow, Oldman, and South Saskatchewan River sub-basins.

The principal recommendation contained in this plan is that:

- AENV stop accepting applications for new water allocations in the Bow, Oldman and South Saskatchewan River sub-basins until the Minister of Environment specifies how water, not currently allocated, should be used (in other words, create a Crown reservation of water).

Other recommendations and provisions included are:

- AENV set the total amount of water available for allocation in the Red Deer River sub-basin at 600,000 cubic decameters (dam^3), an amount which would be subject to re-evaluation from time to time with new information on the aquatic environment and the reliability of new licences.

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  This WCO is designed to permit water diversion while setting a limit on negative impacts on the aquatic environment.

- AENV apply for licences to permit water to be held for WCOs or protection of the aquatic environment in response to opportunities to secure water for these purposes.

- The *South Saskatchewan Basin Water Allocation Regulation* (1991) be repealed.

- The Director is authorized to consider applications for transfers of water allocations.

- The Director is authorized to withhold up to 10 per cent of the volume of water being transferred if it is considered to be in the public interest to protect the aquatic environment or to implement a WCO.

- The Director shall consider the matters and factors provided in this plan in making decisions on applications for licences, preliminary certificates, approvals, or transfers of an allocation of water.

- To improve the efficiency, effectiveness and productivity of water use in the Bow, Oldman, and South Saskatchewan River sub-basins, AENV will act in three broad water management areas:

  - continue to improve water management and administration of water allocations,

- support the development of water markets for transfers to accommodate re-distribution of water already allocated, and

- encourage improvements in water conservation by water users.

- In the Bow, Oldman, and South Saskatchewan River sub-basins, opportunities to restore flows to meet WCOs should be taken. Licence holders will be encouraged to take voluntary action to help restore flows.

- Watershed Planning and Advisory Councils (WPACs) are encouraged to consider the priorities in their watersheds and undertake future watershed management planning with this water management plan as a foundation. A number of priorities are suggested.

- No licence will be cancelled for the sole reason of accomplishing recommended outcomes of this plan. Normal administration of water allocations by Alberta Environment will continue, which may involve canceling licences on grounds stated in the *Water Act*.

A. Background

1. Introduction

This is the draft (Approved[2]) Water Management Plan for the South Saskatchewan River Basin (SSRB), which comprises the Red Deer, Bow, Oldman, and South Saskatchewan River sub-basins within Alberta (Figure 1). The plan applies to all of the named rivers and their tributaries, including all natural water sources with hydrological connection to them. Groundwater that is hydraulically directly connected to surface water is subject to this plan.

This plan reflects the balance that the Government of Alberta is striving to achieve for Albertans between protection of the aquatic environment of SSRB's main rivers, and the water diversion and consumption that contributes to economic prosperity in southern Alberta. The plan was prepared as a result of receiving Albertans' views on the direction water management should take in the SSRB.

This plan will provide the foundation for future watershed management planning for sub-basins in the SSRB.

The key objectives of the planning process were to:

- provide a strategy that balances water consumption and environmental protection in the SSRB, including establishing Water Conservation Objectives (WCOs) and the volume of water that may be available for future allocation;
- review the 1990 *Water Management Policy for the SSRB*;
- review the 1991 *South Saskatchewan Basin Water Allocation Regulation*; and
- determine the matters or factors that the Director must consider in making decisions on applications for approvals, preliminary certificates, licences, or transfers of water allocations.

The plan authorizes and/or recommends the use of:

- water allocation transfers,
- water conservation holdbacks,
- WCOs,
- Crown reservation of water (i.e. the Minister of Environment specifying how water currently unallocated should be used), and
- not accepting licence applications for a specified period of time.

The planning process was guided by a Steering Committee with representatives from Alberta Environment; Alberta Agriculture, Food and Rural Development (Irrigation Branch); Alberta Sustainable Resource Development; and Fisheries and Oceans Canada.

The public consultation process is described in Appendix A. Basin Advisory Committees (BACs) were integral to this process and their report, "Water Management Recommendations," provided the foundation for this plan.

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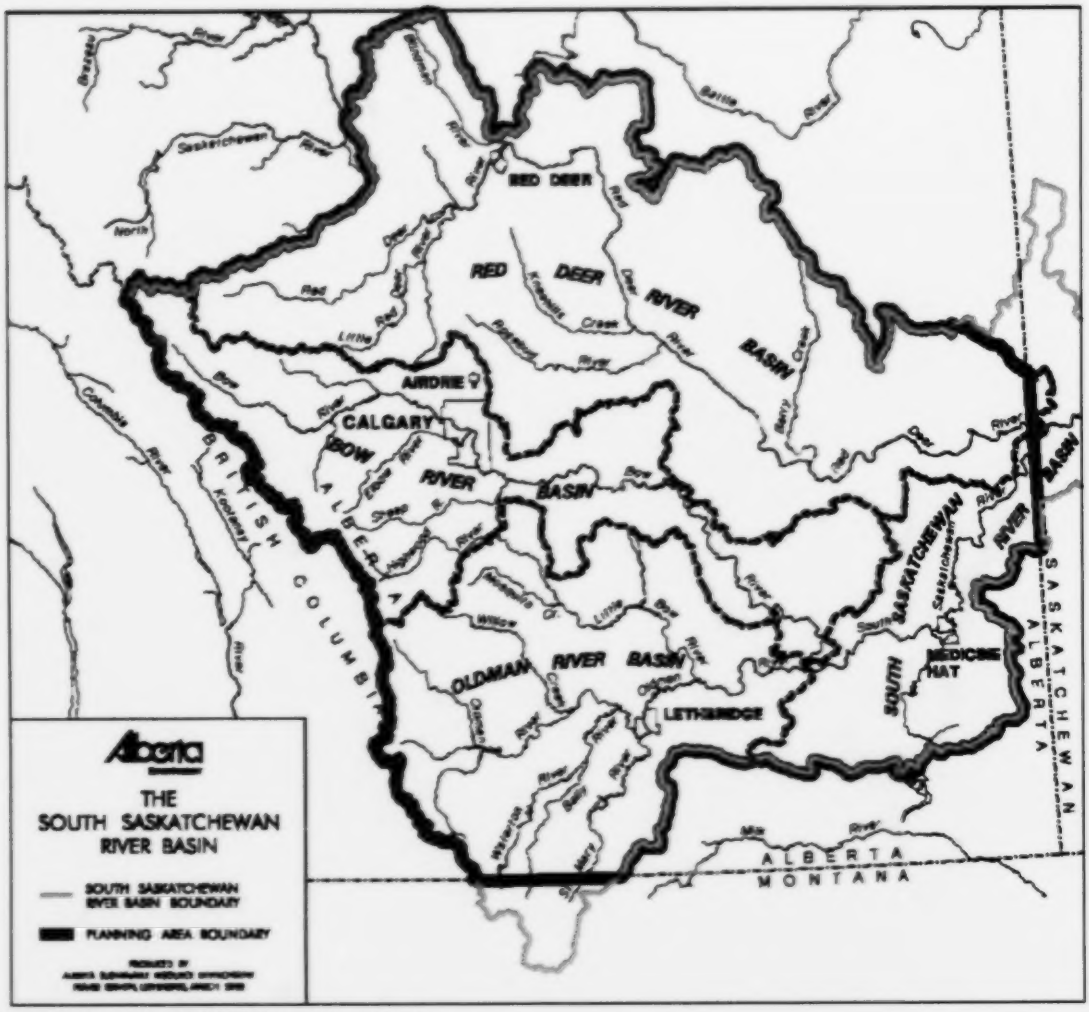

Figure 1: The SSRB Planning Area

2. Context for the Plan and Issues Considered

In Alberta, our quality of life - and life itself - depends on having a safe and sustainable water supply for the environment, our communities, and economic well-being. Population growth, and agricultural and industrial developments are increasing the demand and pressure on Alberta's water supplies, and aquatic ecosystems. Nowhere in Alberta is this more apparent than in the SSRB.

The issues considered in this plan have arisen as a result of questions about the availability of water in the SSRB for all uses. These issues include:

- Meeting water demand and consumption:
  - increasing demand for water relative to supply;
  - unresolved water needs of some First Nations;
  - the suitability of the limits on water allocations to irrigation;
  - significant water supply risks to new licence holders in drier years in the Bow, Oldman, and South Saskatchewan River sub-basins;
  - Alberta's ability to meet the *Master Agreement on Apportionment*; and
  - differences in sub-basin water contributions required to meet the *Master Agreement on Apportionment*.

- Protecting the aquatic environment:
  - poor and declining health of the aquatic environment in portions of the SSRB;
  - increased stress on the aquatic environment as licence use increases;
  - significant imbalances in some parts of the basin between water consumption and flows required to sustain functioning aquatic ecosystems;
  - negatively affected riparian vegetation due to water diversion, storage, and land use management; and
  - knowledge gaps concerning how the aquatic environment (which includes riparian vegetation) responds to changes in river flow regimes (e.g., measuring performance of flow restoration efforts).

A premise for the planning process was that no licence would be cancelled for the sole reason of accomplishing recommended outcomes of the water management plan. Normal administration of water allocations by Alberta Environment will continue, and this may involve cancelling licences on grounds stated in the *Water Act*.

B. Recommendations and Provisions

Recommendations in this plan represent advice to the Minister of Environment and the Director, who are solely responsible for making decisions under the *Water Act*. The provisions described in this plan are other actions to be taken by Alberta Environment.

1. Place Water Resource Limits on the Bow, Oldman, and South Saskatchewan River Sub-basins

Recommendations

- That AENV stop accepting applications for new water allocations in these sub-basins until a Crown reservation is in place in order to determine the purposes for unallocated water.
- That AENV establish a Crown reservation that will make water that is unallocated available for purposes such as:
  - First Nations requirements,
  - storage of peak flow,
  - protection of the aquatic environment, and
  - innovative initiatives with a very low net use of water.

Rationale

Alberta Environment (AENV) recognizes and accepts that the limits for water allocations are being reached in the Bow, Oldman, and South Saskatchewan River sub-basins.

The flow regimes of the Bow and Oldman rivers and southern tributaries has been altered by water diversions. This has created risks for both consumptive users and the aquatic environment. For example, in drier years, low priority licences may not receive their total allocations. Existing diversions have also adversely affected the aquatic environment, including riparian vegetation in the Bow, Oldman, and South Saskatchewan River sub-basins. Issuing more licences would compound these adverse aquatic effects.

2. Place Water Resource Limits on the Red Deer River Sub-basin

Recommendations

- That AENV set the total amount of water available for allocation in the Red Deer River sub-basin at 600,000 cubic decameters (dam^3).
- AENV ensure water remaining in excess of the 600,000 dam^3 is reserved for the aquatic environment.

Rationale

The Red Deer River has fewer allocations than other rivers in the SSRB and, hydrologically, has the healthiest aquatic environment. The 600,000 dam^3 will support future growth while limiting impacts on the aquatic environment. This volume will also prevent licences with an unacceptably high risk of not being able to obtain their full allocations in drier years from being issued and help limit possible future increases in risk to existing licences. However, this volume should be re-evaluated from time to time as more information becomes available on the aquatic environment or the reliability of new licences.

The 600,000 dam^3 includes:

- Sum of existing licences, pending applications and future projections.

- This allows for future irrigation demand to reach 39, 271 hectares, the area limit for the Red Deer River sub-basin specified in the *South Saskatchewan Basin Water Allocation Regulation,* as well as non-irrigation demand to reach the medium growth projection for 2046.

3. Establish Water Conservation Objectives (WCOs)

The WCOs recommended in this plan specify minimum flow rate targets to be achieved through gradual flow restoration or allocation (in the case of the Red Deer River).

In this plan, WCOs are recommended downstream of major dams and diversions for the following rivers:

- Red Deer downstream of the Dickson Dam
- Bow River downstream of the Bearspaw Dam
- Oldman River downstream of the Oldman River Dam
- St. Mary River downstream of the St. Mary River Dam
- Belly River downstream of the uppermost diversion
- Waterton River downstream of the Waterton River Dam
- All of the South Saskatchewan River

Recommended Water Conservation Objectives

- Red Deer River WCO:

Upstream of confluence with Blindman River:

- A rate of flow that is 45% of the natural rate of flow, or 16 cms, whichever is greater at any point in time, for all future licences and licences with a retrofit provision.

Downstream of confluence with Blindman River:

- For future licences for withdrawals from November to March, inclusive:
  A rate of flow that is 45% of the natural rate of flow, or 16 cms, whichever is greater at any point in time.

- For future licences for withdrawals from April to October, inclusive:
  A rate of flow that is 45% of the natural rate of flow, or 10 cms, whichever is greater at any point in time.

- For licences with a retrofit provision:
  A rate of flow that is 45% of the natural rate of flow, or 10 cms, whichever is greater at any point in time.

This WCO is designed to permit water diversion while setting a limit on negative impacts on the aquatic environment.

Operating practices of the Dickson Dam will continue to be improved and enhanced.

Rationale
This WCO would permit water diversion for economic development in the Red Deer River sub-basin while setting a limit on negative impacts on the aquatic environment.

The minimum flow of 16 cms is that required to meet water quality standards for the flow dependent variables of dissolved oxygen and temperature (for fish) during the winter, due to the present nutrient loadings from point and non-point sources.

This WCO will require that future water allocation licences, particularly those requiring year round diversion, will have to have include water storage, as water is likely to be unavailable for diversion during the winter months.

- Bow (Bearspaw Dam to Bassano Dam), Oldman, St. Mary, Belly and Waterton Rivers WCOs:
  - Rate of flow 10 per cent greater than the existing instream objectives (Bow and Oldman rivers) or 10 per cent greater than the existing WCOs for the St. Mary, Belly, and Waterton rivers. (See Appendix 'E' for existing instream objectives and WCOs.)
  - These WCOs for the St. Mary, Belly, and Waterton Rivers should be applied to any licences issued after May 1, 2005 (i.e., for applications received prior to the decision to no longer accept new applications).
  - In the Oldman (except as above), Bow and South Saskatchewan River sub-basins, licences issued for applications pending on May 1, 2005 and existing licences with a retrofit provision should be subject to the existing instream objectives or existing WCOs (see Appendix 'E' for existing instream objectives and WCOs).

  Rationale
  The lower reaches of these rivers have unhealthy riparian areas and degraded aquatic environments due to water diversions. While WCOs will not fully restore the aquatic environment, they will permit opportunities for improvement.

  Research and monitoring of the aquatic system will be a priority in order to support any refinements to the WCOs.

- Bow River (Bassano Dam to mouth) WCO:
  - 17.1 cms

  Rationale
  This WCO would serve to improve the aquatic environment and riparian health, which are currently rated as degraded and unhealthy, respectively.

- South Saskatchewan River WCO:
  - 42.5 cms

  Rationale
  The WCO is the current rate of flow AENV attempts to maintain at Medicine Hat as an operational practice. It is also the rate of flow at which many of the licence holders must stop diverting from the South Saskatchewan River. The WCO would serve as a flow restoration target, but in dry years this rate of flow may not always be maintained if storage in the Oldman Reservoir is not available.

4. Repeal the South Saskatchewan Basin Water Allocation Regulation (1991)

Recommendation

- The Regulation be repealed.

Rationale

The Regulation is superseded by the recommendations and provisions of this plan that set limits on water allocations.

5. SSRB sub-basins continue to be treated as a whole to meet the *Master Agreement* on Apportionment (1969)

Provisions

- All of the sub-basins on the SSRB will continue to be treated as a whole in order to meet the *Master Agreement on Apportionment*.

- In order to address concerns regarding sub-basin contributions to apportionment:
  - A committee with representation from each of the WPACs and the South Saskatchewan River sub-basin will be formed. The committee will provide advice to AENV Water Management Operations on an annual basis (more frequently if required) on how to best meet apportionment on an operational basis; and
  - The WPACs and representatives from the South Saskatchewan River sub-basin should develop criteria to be considered in providing this advice.

Rationale

Under the 1990 *SSRB Water Management Policy*, the basin has operated as a single unit to meet requirements of the *Master Agreement on Apportionment*. This permits flexibility in drawing on the sub-basins in response to annual variations in water supply and demand.

6. Use of Water Allocation Transfers and Water Conservation Holdbacks and Matters and Factors that Must be Considered When Making Decisions.

Some water management tools provided by the *Water Act* require authorization by an Approved Water Management Plan. The SSRB Approved Water Management Plan, Phase One (2002) authorized water allocation transfers and water conservation holdbacks. This draft (Approved) SSRB Water Management Plan continues these authorizations, as detailed below.

- Water Allocation Transfers

> The Director (as designated under the *Water Act*) is hereby authorized to consider applications to transfer water allocations under licences in the SSRB in Alberta, subject to sections 81, 82 and 83 of the *Water Act*.

In order for a transfer to proceed, an application for the transfer must be submitted to AENV. The AENV designated Director decides whether the transfer will be allowed. If a

transfer is allowed to proceed, then a new licence is issued for the transferred allocation. The Director may attach conditions to a licence transfer.

Under section 82(5) of the *Water Act*, an Approved Water Management Plan can identify matters and factors that must be considered by the AENV designated Director in making a decision on an application for a water allocation transfer. The matters and factors that must be considered in the SSRB are listed in Table 1.

Only allocations of "licences in good standing" can be transferred (see definition in Glossary).

Under the *Water Act* (81(6)), proposed transfers must undergo public review. The applicant for a transfer must also provide public notice of the application. Directly affected parties can submit statements of concern.

AENV will maintain a public list of water allocation licences to assist interested parties in arranging transfers. This list will include the volume and priority for each licence.

- Water Conservation Holdbacks

The Director is hereby authorized to withhold up to 10 per cent of an allocation of water under a licence that is being transferred, if the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a Water Conservation Objective.

Water conservation holdbacks permit up to 10 per cent of the volume of a transferred allocation to remain in the river for the benefit of the aquatic environment, to implement a WCO, or the withheld water may be reserved (section 35 of *Water Act*) or added to an existing reservation.

Section 83(1) of the *Water Act* states:

> If the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a Water Conservation Objective, and the ability to withhold water has been authorized in an applicable approved water management plan or order of the Lieutenant Governor in Council, the Director may withhold up to 10 per cent of an allocation of water under a licence that is being transferred.

The Director may withhold less than 10 per cent if a smaller amount of water is sufficient to protect the aquatic environment or to implement a WCO. When the point of diversion is being moved a significant distance downstream, a holdback may not be justifiable as the entire allocation is then contributing to increased flows over a greater distance.

It is recommended that withheld water remain in the river through a WCO licence.

- Matters and Factors that Must be Considered in Making Decisions on Applications for Licences, Preliminary Certificates or Approvals

  The *Water Act* contains a provision (section 51(4)) that an Approved Water Management Plan can identify matters and factors that must be considered by the AENV designated Director in making decisions on applications for water licences, preliminary certificates or approvals. The matters and factors that must be considered in the SSRB are listed in Table 2.

Table 1. Matters and factors that must be considered in making decisions on applications for a transfer of an allocation of water under a licence in the SSRB

Matters and Factors	Guideline
Existing, potential and cumulative effects on the aquatic environment and any applicable instream objective and/or Water Conservation Objective	• No significant adverse effect on the aquatic environment resulting from the transfer • No significant adverse effect on existing instream objectives or Water Conservation Objectives resulting from the transfer
Existing, potential and cumulative hydraulic, hydrological and hydrogeological effects	• No significant adverse effect.
Existing, potential and cumulative effects on household users, traditional agriculture users and other higher and lower priority licensees	• From the *Water Act,* Section 82(3)(b): *the transfer of the allocation, in the opinion of the Director, does not impair the exercise of rights of any household user, traditional agriculture user or other licensee other than the household user, traditional agriculture user or other licensee who has agreed in writing that the transfer of the allocation may take place*
With respect to irrigation, the suitability of the land to which the allocation of water is to be transferred for irrigated agriculture	• The land must be suitable for irrigated agriculture: Class 4 or better in accordance with the standards of Alberta Agriculture, Food and Rural Development
The historic volume, rate and timing of the diversion under the original licence	• No significant adverse effect.
The volume, rate and timing of the diversion under the proposed new licence	• No significant adverse effect.
Location of the existing diversion and the proposed new diversion	• No significant adverse effect.
Water quality (including public health and safety and assimilative capacity)	• No significant adverse effect on public health and safety or assimilative capacity
The linkages between surface and ground water and the effects or changes in the overall system of water use	• No significant adverse effect on groundwater quantity or quality
Existing, potential and cumulative effects on the operation of reservoirs or other water infrastructure	• No significant adverse effect on operations unless the reservoir or infrastructure licensee agrees it is feasible to adjust operations to mitigate effects
Current conditions on the licence from which water is to be transferred	• In the case of a transfer of part of an allocation, there will be no adjustments to the current conditions on the part of the allocation that is not being transferred, unless necessary to give effect to the transfer
Master Agreement on Apportionment (Alberta's commitments to Saskatchewan)	• The terms of the *Apportionment Agreement* will be respected
Existing treaty rights and other interests of First Nations in Alberta.	• Government of Alberta *First Nation Consultation Policy on Land Management and Resource Development*, 2005, as amended
The *Water Act* (82)(5)(c)(iv) also provides that the Director may consider any other matters applicable to the transfer of the allocation that the Director considers relevant.	

Table 2. Masters and factors that must be considered in making decisions on applications for licences, preliminary certificates or approvals affecting surface water in the SSRB

Matters and Factors	Guideline
Existing, potential and cumulative effects on the aquatic environment and any applicable instream objective and/or Water Conservation Objective	• No significant adverse effect on the aquatic environment • No significant adverse effect on existing instream objectives or Water Conservation Objectives
Existing, potential, and cumulative hydraulic, hydrological and hydrogeological effects	• No significant adverse effect
With respect to irrigation, the suitability of the land for irrigated agriculture	• The land must be suitable for irrigated agriculture: Class 4 or better in accordance with the standards of Alberta Agriculture, Food and Rural Development
Existing, potential, and cumulative effects on the operation of reservoirs or other water infrastructure	• No significant adverse effect on operations unless the reservoir or infrastructure licensee agrees it is feasible to adjust operations to mitigate effects
Existing treaty rights and other interests of First Nations in Alberta.	• Government of *Alberta First Nation Consultation Policy on Land Management and Resource Development*, 2005, as amended

7. Water Management Strategies to be Developed

AENV and water users should pursue broad water management strategies to help ensure water availability for economic development and the aquatic environment in the SSRB.

Water Demand and Consumption

- Improvements in water management and administration of allocations
  - Alberta Environment will improve its water management and administration by, for example:
    - tracking actual water use,
    - upgrading computer modeling capabilities, and
    - exploring innovations and improvements in water licencing and legislation in order to better match allocations with needs.

- Water markets
  - AENV will support the development of water markets for transfers to accommodate the re-distribution of water already allocated in the SSRB.

- Water conservation
  - Improvements in water conservation methods will be encouraged.

The Aquatic Environment

- High Flow Events and Dam Management
  - Major on-stream dams owned and operated by the Alberta Government are managed to safely pass flows resulting from significant precipitation and snow melting events that occur upstream. Flow releases are made in accordance with flood operating procedures so that the flood is passed through the facility without jeopardizing the integrity of the dam and in a manner that attempts to minimize the impacts of high flows downstream on infrastructure and public safety. After the inflows have peaked, releases are reduced in a staged manner to return the reservoir to its target level for that time of year. During this time, there may be opportunities for flow management to provide benefits for the aquatic and riparian environment. These opportunities depend on many things, including the time of year, reservoir storage levels, the magnitude of releases, and biological benefits.
  - Minor changes in dam operating practices could have more implications to the aquatic environment than transfers or holdbacks. For example, judicious flow reduction after a high flow event could greatly benefit replenishment of cottonwood poplar trees, in the right conditions.
  - Operating practices will continue to be improved and enhanced.

- Protection and Management of Riparian Vegetation
  - AENV will complete the Aquatic and Riparian Condition Assessment (ARCA) for the mainstem rivers of the SSRB to help protect and manage riparian vegetation. Protection and management of riparian vegetation requires suitable water and land management. Land management is outside the jurisdiction of AENV, however, AENV will work in partnership with the WPACs to prepare watershed management plans to encourage healthy riparian ecosystems.

- Flow Restoration in the Bow, Oldman, and South Saskatchewan River Sub-basins
  - Opportunities to restore flows should be taken. Licence holders will be encouraged to take voluntary flow restoration actions.
  - Research should be conducted to determine how increments of flow restoration will benefit the aquatic environment.
  - Operating licences for government dams and WCO conditions on diversion licences should be revised if measurable amounts of flow are licenced for WCOs or protection of the aquatic environment. This will ensure the increased instream flow remains in the river, subject to priorities.
  - Discussions should be held with senior priority licence holders regarding voluntary withdrawal restrictions to prevent withdrawals of restored flows. These discussions are important as the priority of senior licences would likely permit the withdrawal of restored flow water.

- Allow private parties to hold licences for Water Conservation Objectives
  - Currently, the *Water Act* specifies that only the government can apply for and hold a licence for a water conservation objective. However, as a result of public input, AENV will put forward a proposal to amend the *Water Act* to permit private parties to hold such licences, when obtained under the transfer provisions of the *Water Act*.

- Water Quality
  - Water quality should be studied in more detail throughout the SSRB. This will support further decision making as to sustaining growth and managing the rivers to enhance aquatic life.

- Maintenance of the Red Deer River Sub-basin's Aquatic Environment
  - The Red Deer River's aquatic environment is a research priority as it is currently the healthiest (hydrologically) of the SSRB rivers. Research should focus on monitoring the impacts of additional allocations. Additional monitoring and study should also be carried out on the flows required for waste assimilation. With further research, the WCO and allocation volume (600,000 dam^3) may be adjusted to minimize or prevent unacceptable impacts. If monitoring reveals potential problems, adaptive management principles will be applied.
  - If it is determined 16 cms winter minimum flow is no longer required to meet water quality requirements, consideration will be given to storing the surplus water in Glennifer Lake to the extent possible to supplement high flow events for the benefit of the aquatic environment.

C. Other Items

1. Future Watershed Management Planning Priorities

Watershed Planning and Advisory Councils (WPACs) are encouraged to consider the priorities in their watersheds and undertake future watershed management planning with this water management plan serving as a foundation. The recommendations report of the Basin Advisory Committees and the *Water For Life* strategy both contain suggested priorities. These include: Holistic watershed management, performance indicators, land uses, economic planning, water conservation, water quality, groundwater, objectives for aquatic ecosystems and evaluation of infrastructure needs (e.g. storage).

2. Performance Monitoring Requirements

In consultation with the WPACs, performance monitoring of the aquatic environment should be conducted, including:

- Flow monitoring to confirm water modelling results and adherence to designated WCOs.
- Tracking and reporting of actual water diversions and consumption.
- Water quality monitoring, particularly of dissolved oxygen and temperature, to confirm modelling results and to help ensure protection of the aquatic environment. Additional parameters such as nutrients and pesticides can be monitored using the Long-term River Network program and targeted water quality initiatives.
- Assessments of biological communities, particularly fish populations and riparian forests.

Research and monitoring of the aquatic system will be a priority in order to support any refinements to the WCO and allocation recommendations.

3. First Nations Involvement

AENV is currently assessing First Nation involvement in WPACs.

4. Schedule for Review of the Plan

No specific schedule is in place to review the plan. Plan revisions will be considered, if and when required, as new information becomes available and according to WPAC input. The *Water Act* (section 12) describes the process for revisions.

D. References

Information on the SSRB Water Management Plan and the background studies can be found at: www3.gov.ab.ca/env/water/regions/ssrb/index.asp

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E. Glossary

AENV ~ Alberta Environment

Allocation ~ The volume, rate and timing of a diversion of water. When water is redirected for a use other than for household purposes (use by an owner of property adjacent to a water body or from an aquifer), it is referred to as an allocation. All water users (except for household users) apply to Alberta Environment for a licence to use a set allocation of water.

Apportionment ~ (see *Master Agreement on Apportionment*)

Approval ~ Under the *Water Act*, an approval provides authority for constructing works or for undertaking an activity within a water body. The approval includes conditions under which the activity can take place.

Aquatic Environment ~ (As defined in Alberta's *Water Act)* The components of the earth related to, living in or located in or on water or the beds or shores of a water body, including but not limited to all organic and inorganic matter, and living organisms and their habitat, including fish habitat, and their interacting natural systems.

BAC / Basin Advisory Committee ~ Established in each of the four sub-basins of the South Saskatchewan River Basin to provide advice for the SSRB Water Management Plan. Members of the BACs represented all sectors interested in water management in the sub-basin. Each sector selected its own representatives on the BAC. Typical sectors represented in a BAC include irrigation agriculture, non-irrigation agriculture, ecosystem protection/environmental, First Nations, industry, municipal and recreation.

cfs ~ cubic feet per second

cms ~ cubic metres per second

Condition on Licences ~ The terms of the licence that must be followed.

Crown Reservation ~ Section 35(1) of the Water Act states that "the Minister may by order reserve water that is not currently allocated under a licence or registration or specified in a preliminary certificate

(a) in order to determine how the water should be used, or
(b) for any other purpose."

dam^3 ~ decametres cubed (1,000 cubic meters). 1 dam^3 = 0.81 acre feet.

Director ~ For purposes of administration of the *Water Act*, certain staff in Alberta Environment, such as Approvals Managers, are designated as "Director". Under the *Water Act* the Director has sole authority to make decisions concerning a number of specified subjects, e.g., transfers, holdbacks, establishing WCOs.

Dissolved Oxygen ~ Amount of available oxygen contained in the water, but not including the oxygen that is part of the water molecule (H_2O). Expressed as milligrams per litre.

Instream Flow ~ The rate of flow in a river, without reference to its purpose.

Instream Needs / Instream Flow Needs (IFN) ~ This is the scientifically determined amount of water, flow rate, water level or water quality that is required in a river or other body of water to sustain a healthy aquatic environment or to meet human needs such as recreation, navigation, waste assimilation, or aesthetics.

Instream Objectives ~ Flows that are to remain in the river via dam operations or as a restriction on licences. Instream Objectives are in place in all SSRB rivers below dams, although some offer limited protection of the aquatic environment. Instream Objectives have usually been set in response to fish habitat instream needs (the Fish Rule Curve) and/or water quality.

Irrigation District ~ An organization that owns and manages a water delivery system for irrigation for a given region. In Alberta, there are 13 irrigation districts. Some districts convey water for other purposes such as municipal use and stockwatering.

Licence In Good Standing ~ This term is used in Alberta's *Water Act*, but is not defined. One of the issues that must be determined by the Director is whether or not the allocation of water to be transferred is held "under a licence in good standing" (*Water Act*, s. 81(7)(c)).
The licence has to be in good standing at the time the Director considers the application (that is, it already exists in good standing or the licence holder brings the licence into good standing prior to the time when the Director considers the application to transfer.)
Examples of a licence not in "good standing":

- breach of the *Water Act*
- subject to an investigation under the *Water Act*
- subject to an enforcement tool or prosecution
- breach of terms and conditions of the licence
- non-compliance with the terms and conditions (e.g. did not build the diversion site within the specified period)

Master Agreement on Apportionment ~ Schedule A of the 1969 *Master Agreement on Apportionment* for the South Saskatchewan River between Alberta and Saskatchewan allows Alberta to "divert, store or consume" from the river system each year, a volume of water equal to one-half of the apportionable flow of the South Saskatchewan River at the Alberta-Saskatchewan boundary. The remaining volume of flow must be allowed to pass downstream into Saskatchewan. The exception to this general rule is that Alberta is entitled to divert, store or consume a minimum of 2.1 million-acre feet in any year. The effect of this exception is that during years when the volume of natural flow is less than 4.2 million-acre feet (a rare occurrence), Alberta may pass less than one-half of the apportionable flow to Saskatchewan. If at any time during a year Alberta wants to divert, store or consume more than half the apportionable flow, a flow rate of 1,500 cubic feet per second (cfs) must be maintained at the Saskatchewan border, unless the natural flow is less than 3,000 cfs, in which case half the natural flow must be passed. *(There is no policy in Alberta as to the amount of water each sub-basin of the SSRB must contribute to the Saskatchewan apportionment.)*

Natural Flow / Natural Rate of Flow ~ Natural flow is the flow in rivers that would have occurred in the absence of any man-made effects on, or regulation of, flow. For purposes of water management, natural flow is a calculated value based on the recorded flows of contributing rivers; a number of factors concerning the river reaches (e.g. evaporation, channel

losses, etc.); and water diversions. This is also known as "re-constructed flow" and "naturalized flow".

Preliminary Certificates ~ An authorization issue by the Director to issue a licence if certain conditions are met.

Reservoir ~ A man-made structure which collects and stores water. During periods of low river flow, government reservoirs may release additional flow if water is available.

Retrofit Provision ~ Water licenses issued in recent years contain a condition indicating that once a water conservation objective is established, the licence may be amended to include the objective. The licence holder would then not be permitted to withdraw water when river flow is less than the objective.

Riparian Area ~ The area along streams, lakes, and wetlands where water and land interact. These areas support plants and animals, and protect aquatic ecosystems by filtering out sediments and nutrients originating from upland areas.

Riparian Vegetation ~ The vegetation that exists in riparian areas and is supported by the interaction of the water and land.

River Basin ~ An area of land drained by a river and its associated streams or tributaries. Alberta's *Water Act* identifies seven major river basins within the province:

- Peace/Slave River Basin
- Athabasca River Basin
- North Saskatchewan River Basin
- South Saskatchewan River Basin
- Milk River Basin
- Beaver River Basin
- Hay River Basin

SSRB ~ South Saskatchewan River Basin. The South Saskatchewan River Basin includes the sub-basins of the Red Deer River, Bow River, and Oldman River (including the South Saskatchewan).

Southern Tributaries ~ This term refers to the St. Mary, Belly and Waterton rivers, which are also collectively referred to as the southern tributaries of the Oldman River.

Sub-basin ~ A part of a river basin drained by a tributary or having characteristics that are significantly different from other areas in the basin.

Surface Water ~ Refers to water bodies such as lakes, ponds, wetlands, rivers, and streams. It may also refer to sub-surface water with a direct and immediate hydrological connection to surface water (for example, a water in a well beside a river).

Voluntary Action ~ Performing an activity freely without compulsion.

WCO ~ Water Conservation Objective

WPAC ~ Watershed Planning and Advisory Council (see *Water for Life: Alberta's Strategy for Sustainability*). In the SSRB (at the time of writing this plan), WPAC's include the Bow River Basin Council and the Oldman Watershed Council. A WPAC is also being formed for the Red Deer River watershed.

Water Act ~ The purpose of Alberta's *Water Act* is to support and promote the conservation and management of water, including the wise allocation and use of water (s.2).

Water Allocation Transfer ~ A water allocation transfer occurs after the holder of an existing water licence agrees to provide all or part of the amount they are allocated to another person or organization. Alberta Environment must approve any transfer of this kind. When this occurs, the allocation is separated from the original land, and a new licence, with the seniority of the transferred allocation, is issued and attached to the new location. Under the *Water Act*, Alberta Environment can place conditions on the new licence. Water allocation transfers can occur only if authorized under an approved water management plan, or by the Lieutenant Governor in Council. See Sections 81,82 and 83 of the *Water Act*.

Water Conservation Holdback ~ If the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a Water Conservation Objective, and the ability to withhold water has been authorized in an applicable approved water management plan or order of the Lieutenant Governor in Council, the Director may withhold up to 10 per cent of an allocation of water under a licence that is being transferred.
The withholding occurs at the time the new licence created for the transferred allocation is issued (section 82(2) of the *Water Act*).

Water Conservation Objective (WCO) ~ As defined in Alberta's *Water Act*, a Water Conservation Objective is the amount and quality of water necessary for the protection of a natural water body or its aquatic environment. It may also include water necessary to maintain a rate of flow or water level requirements.

From the *Water Act*: *"Water Conservation Objective" means the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the*

(i) protection of a natural water body or its aquatic environment, or any part of them,
(ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or
(iii) management of fish or wildlife, and may include water necessary for the rate of flow of water or water level requirements.

A licence can be issued by the Director to the Government of Alberta for the purpose of implementing a Water Conservation Objective.

Water Licence ~ A water licence provides the authority for diverting and using surface water or groundwater. The licence identifies the water source; the location of the diversion site; an amount of water to be diverted and used from that source; the priority of the "water right" established by the licence; and the condition under which the diversion and use must take place.

Water Management Plan ~ Alberta's *Water Act* and *Framework for Water Management Planning* outlines the process for water management planning and the components required for water management plans in the province.

Water Use Efficiency ~ To use the least possible water to accomplish an objective such as growing a crop.

Water Use Effectiveness ~ To use water for purposes that provide the maximum desired benefits for society.

Watershed ~ An area of land that catches precipitation and drains into a larger body of water such as a marsh, stream, river or lake.

Appendices

Appendix A

Public Consultation Process

Phase One

Basin Advisory Committees (BACs) were formed in late 2000 and early 2001. Letters inviting representatives for the BACs were sent to municipalities, Treaty #7 First Nations, major water-using industries, recreation groups with an interest in water, fish and game clubs, environmental organizations, irrigation districts, and agricultural organizations in the SSRB. After initial organizational meetings, the basic structure of the BACs was created.

A number of BAC sessions were held in 2001 to familiarize the members with water management and relevant issues in the SSRB.

In 2001, Alberta Environment (AENV) decided to carry out the planning in phases. The primary purpose of Phase One was to seek public views on the authorization of water allocation transfers, water conservation holdbacks, and the question of not accepting applications for new allocations in the basins of the St. Mary, Belly, and Waterton rivers.

Phase One commenced in October 2001. Several meetings were held with each BAC and in plenary at which the above matters were discussed. Based on these discussions a draft plan was prepared.

During January 2002, public meetings to receive comments on the draft plan were held in Red Deer, Drumheller, Bindloss, Calgary, Brooks, Medicine Hat, and Lethbridge.

Although some people were concerned about the development of a market for water, the public was broadly supportive of authorizing the use of water allocation transfers and water conservation holdbacks in the SSRB.

On the question of AENV no longer accepting applications for new allocations in the basins of the St. Mary, Belly, and Waterton rivers, some opinions were heard that AENV should continue to issue licences indefinitely. Those holding this view saw accepting a high-risk licence as a private business decision. However, most members of the public were in agreement with a set allocation volume in view of the adverse impacts on the aquatic environment and the administrative difficulties of an unlimited number of licences.

The comments were documented and then considered in preparation of the final draft plan. In June 2002 the plan was approved by the provincial cabinet to become the first Approved Water Management Plan in Alberta under the new *Water Act*.

Phase Two

During the final months of Phase One, discussions began on Phase Two. Over a one-year period, background studies for the project were prepared. In June 2003 the studies were completed and a summary booklet of the studies was prepared and provided to the BACs and others. The BACs reviewed the studies during the summer of 2003.

In September of 2003, Equus Consulting Group (Mr. Bill McMillan) was retained by AENV to help the BACs develop recommendations for the draft water management plan. During the next few months each BAC met with Mr. McMillan on several occasions to hear presentations on the background studies and to consider possible recommendations. Chairs and Vice-chairs of the BACs were appointed by the BACs at the suggestion of Mr. McMillan. The Chairs had discussions on a number of occasions with Mr. McMillan, which helped the Chairs understand the differing perspectives of each BAC. In July 2004, the BACs submitted a report on their recommendations to the Steering Committee for the planning project. These recommendations formed the foundation for the water management plan.

During Phase Two, AENV created new staff positions in each region to improve relationships with First Nations. The Aboriginal Consultation Manager for the Southern Region of Alberta Environment held a number of meetings with the Treaty #7 First Nations between April and May 2005. General concerns identified during these meetings were considered in preparation of the water management plan.

Appendix B

Relationship of the Water Management Plan to Other Planning Initiatives

In general, water management plans should "provide broad guidance for water management, set out clear and strategic directions regarding how water should be managed or result in specific actions" (*Framework for Water Management Planning*, p.13). The success of the SSRB water management plan will depend in part on an understanding of the many other commitments and initiatives that affect how water is used and managed in southern Alberta.

This appendix contains a description of the main planning initiatives known to impact water use and conservation in the SSRB, along with some examples of how the initiatives interrelate with the water management plan. Some local watershed initiatives not specifically identified in this appendix. Rather a list of the agencies involved in these initiatives is provided.

Provincial Initiatives

- *Water for Life: Alberta's Strategy for Sustainability*

  The Alberta Government has recently adopted a new approach to water management through *Water for Life: Alberta's Strategy for Sustainability*. *Water for Life* outlines key directions and priorities to guide future water management in Alberta.

  Water for Life is based on the following commitments to Albertans:
  - Albertans will be assured their drinking water is safe.
  - Albertans will be assured that the province's aquatic ecosystems are maintained and protected.
  - Albertans will be assured that water is managed effectively to support sustainable economic development.

  The SSRB Water Management Plan will help towards achieving *Water for Life's* goal of protecting aquatic ecosystems.

  The strategy also contains medium-term (2007-10) and long-term (2010-14) outcomes:
  - Water management objectives and priorities for sustaining aquatic ecosystems are established through watershed plans.
  - Water is managed and allocated to sustain aquatic ecosystems and ensure their contribution to Alberta's natural capital and quality of life are maintained.
  - Water management objectives and priorities to support sustainable economic development are established through watershed plans.
  - The overall efficiency and productivity of water use in Alberta has improved by 30 per cent from 2005 levels by 2015 (firm targets to be determined by the Provincial Water Advisory Council).

  While the Government of Alberta, led by Alberta Environment, will remain accountable and will continue to oversee water and watershed management activities in the province, *Water for Life* identifies three types of partnerships that are integral to achieving stewardship of our water resources:

- a Provincial Water Advisory Council ,
- Watershed Planning and Advisory Councils (WPACs), and
- Watershed Stewardship Groups (WSGs)

- *Government of Alberta's First Nation Consultation Policy on Land Management and Resource Development*

  The Government of Alberta is responsible for managing the development of its natural resources for the benefit of all Albertans. Alberta acknowledges that the existing Aboriginal and treaty rights of the Aboriginal peoples of Canada are recognized and affirmed by Section 35 of the *Constitution Act* (1982).

  Alberta will consult with First Nations where land management and resource development on provincial Crown land may infringe First Nation rights and traditional uses.

- *Sustainable Resource and Environmental Management (SREM)*

  The SREM framework is designed to focus provincial government departments on delivering environmental outcomes through integrated policy making and performance measurement. SREM involves a tiered approach to achieving environmental outcomes (see Table below). There is recognition in SREM that environmental quality can be achieved only if the cumulative effects of economic development can be effectively managed through long-term integrated actions. Assessment of the implications of economic development and growth strategies will assist with making appropriate decisions and achieving environmental outcomes.

SREM Tier	**Initiatives to Establish Environmental Outcomes**
Provincial Scale: Vision & Mission	Government of Alberta and federal business plans; Water for Life; Alberta Agriculture Growth Strategy; Economic Development Strategy; Canada and Alberta Biodiversity Strategies; Alberta Land Use Strategy; Municipal policies
Regional Scale: Priorities	Southern Alberta Sustainability Strategy (SASS), Eastern Slopes Policy
Sub-regional Scale: Objectives	Water Management Plans; Airshed Management Plans; Integrated Land Management/Integrated Resource Planning Policies; Access Management Plans; Municipal Area Structure Plans; Species at Risk; Recovery Plans; Energy development guidelines specific to grasslands; Inter-Municipal Regional Partnership Strategies
Local Scale: Results	Regulatory approvals; Environmental Impact Assessment decisions; Local plans: parks, subdivisions, logging etc.; Stormwater guidelines for streams; Total loading limits for streams; Local Cows & Fish initiatives; Environmental Farm Plans

Regional Initiatives

- *Southern Alberta Sustainability Strategy (SASS)*

  At the regional scale, environmental outcomes can be described as "integrated regional priorities" i.e. long-term, integrated, value-based decisions made by making trade-offs between environmental protection and socio-economic development. These decisions require an understanding of the interaction of environmental sectors and media, as well as their interaction with the regional economy. They also require public debate and consensus for action.

  The SASS process provides environmental and socio-economic information about the future of the southern Alberta landscapes, which allows for informed public debate about environmental outcomes. Public debate, for example, may focus on such questions as:
  - How can protection of instream flows be maintained or improved in a region experiencing rapid economic growth?
  - How can future development of natural gas (coalbed methane), timber harvesting, tourism, and recreation continue while protecting the watershed?
  - What priority should protection of native grasslands have over development of urban and rural residential housing, energy development, or agriculture?

  The desired outcome of the project is fourfold:
  - to arrive at societal consensus on the desired future vision for southern Alberta;
  - understanding of the major forces driving change and the critical uncertainties facing southern Alberta over the next two generations;
  - strategic understanding of the current and emerging socio-economic and environmental situation, issues and opportunities, and their relationship to one another; and
  - processes and policy changes required to address future issues and opportunities.

South Saskatchewan River Basin (SSRB)

The following lists describe management plans in place or currently underway in the SSRB, along with other projects and initiatives that may impact water management. Where appropriate, lead government departments are identified.

- *Integrated Resource Plans, Forest Management Plans*
  - Lead: Alberta Sustainable Resource Development
  - Purpose: There is generally one objective per plan (e.g., protection of watersheds)
  - Several plans are either in place or underway

- *Municipal Development Plans*
  - Lead: Urban and rural municipalities
  - Purpose: To guide development towards reducing negative impacts on the environment, including the water resource
  - Several plans are either in place or underway

- *Management Plans for Parks and Protected Areas (National and Provincial)*
  - Lead: Parks Canada; Alberta Community Development
  - Purpose:
    - Parks Canada: As a strategic and long-term guide, a management plan establishes a vision looking 15 or more years into the future. Its primary goal is to ensure that there is a clearly defined direction for the maintenance or restoration of ecological integrity and, in the light of this primary goal, for guiding appropriate use. Management plans outline how our natural heritage will be preserved in each park and protected area.
    - Alberta Community Development: Management plans describe the type and extent of outdoor recreation and tourism opportunities, facilities, and services that will be permitted. These plans have the inherent effect of watershed protection.
  - Several plans are either in place or to be initiated

- *National Water Supply Expansion Program (NWSEP)*
  - NWSEP is a four-year initiative under the Agricultural Policy Framework.
  - Purpose: To reduce the risk of future water shortages through the planning and development of secure, healthy, and reliable water resources.
  - Project tiers include smaller-scale water development projects; larger-scale infrastructure projects (such as regional water pipelines); and strategic initiatives such as studies, planning activities, and/or undertakings that increase the knowledge base of the water resource.
  - In total, the Government of Canada is providing $12.5 million for projects in Alberta until March 31, 2008.

- *Local watershed initiatives in smaller basins (in place or underway)*
  - Examples include: Little Red Deer River Watershed Initiative, Crowfoot Creek, Nose Creek Watershed Partnership, Beaver Creek Watershed Group, Frank Lake Water Quality Mitigation Initiative, Milk River Watershed Planning and Advisory Council, (proposed), Chestermere Lake Working Group, Grand Valley Creek Partnership, Pine Lake Restoration Society, Grand Valley Creek Partnership, Calgary River Valleys Committee, Alberta Low Impact Development Partnership, Piikani Nation Follow-up Environmental Impact Assessment.
  - A number of local watershed protection groups/initiatives are currently active in the SSRB. These local initiatives can take many forms but are often characterized by private landowners working in partnership with local municipalities and agencies such as:
    - Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration (PFRA)
    - Ducks Unlimited Canada
    - Alberta Agriculture, Food and Rural Development (AAFRD)
    - Department of Fisheries and Oceans (DFO)
    - Alberta Conservation Association (ACA)
    - Cows and Fish, Alberta Riparian Habitat Management Program
    - Community Riparian Program under the Agriculture and Food Council.

These local groups will be key to achieving long-term sustainable watershed management.

Bow River Basin

- *Highwood Water Management Plan*
  - Lead: Alberta Environment
  - Purpose: Phase 1 of the Highwood Management Plan deals with matters directly relevant to the Highwood Diversion Plan and information requirements of the Natural Resources Conservation Board/Canadian Environmental Assessment Agency Joint Review Panel. Phase 2 will address other aspects of water management in the Highwood River Basin, including Water Conservation Objectives and the current moratorium on *Water Act* approvals in the basin. The overall goal is to achieve sustainable water management in the Highwood River, Little Bow River, and Mosquito Creek sub-basins.
  - A Public Advisory Committee (PAC) was formed to advise on the development of the water management plan for the Highwood-Little Bow system.
  - Studies (e.g., Instream Flow Needs) conducted within this process have served as prototypes for other studies within the SSRB

- *Little Bow River and Mosquito Creek Water Quality Protection Plan*
  - Lead: Alberta Environment
  - Purpose: To prepare a Water Quality Protection Plan that will outline the activities in the Little Bow River Basin necessary to achieving a mesotrophic state of water quality in the reservoir.

- *Elbow River Water Management Plan*
  - Lead: The Elbow River Watershed Partnership
  - Purpose. The Partnership was formed in response to a growing concern about the deteriorating water quality in the Elbow River, the increasing urbanization of the Elbow watershed, and concern about relying solely on the government to protect the watershed. The Partnership is preparing a water management plan to address stakeholder concerns.

- *Ghost-Waiparous Access Management Plan*
  - Lead: Alberta Sustainable Resource Development
  - Purpose: To develop an access management plan intended to provide opportunities for recreational use in the Ghost-Waiparous area while maintaining the area's natural resources.

- *The Bow River Basin Council (BRBC)*
  - The BRBC is a multi-stakeholder, charitable organization dedicated to the improvement and protection of the waters of the Bow River Basin, considering:
    - riparian zones,
    - aquatic ecosystems,
    - quality and quantity of water, and
    - effects of land use on surface and groundwater.
  - The BRBC currently has approximately 140 members
  - The Bow Basin Advisory Council (BAC) is one of four basin advisory groups asked to develop recommendations for the SSRB plan. The BAC in the Bow River Basin is a sub-committee of the BRBC.
  - Released *The 2005 Report on the State of the Bow River Basin* on April 29, 2005

Red Deer River Basin

- *Red Deer River Corridor Integrated Management Plan (in place)*
  - Lead: Alberta Environment, Alberta Sustainable Resource Development, Alberta Community Development, municipalities
    - Purpose: The purpose of this integrated management plan is threefold:
      - To coordinate and integrate land and resource management in the corridor to provide long-term, integrated management direction;
      - To mitigate and resolve conflicts between resource uses and minimize impacts of resource uses on historic and natural resources; and
      - To promote sustainable development in the corridor.
  - The plan contains references to water management, river recreation, and fisheries

- *Glennifer Lake Reservoir Shorelands Areas Structure Plan (in place)*
  - Lead: Alberta Environment, Alberta Community Development, municipalities
  - Purpose: Contains policies for reservoir levels for recreation and affects water management for the Red Deer River downstream.

- *Special Areas Water Supply Project (proposed)*
  - Lead: The Special Areas Board (Alberta Municipal Affairs)
  - Purpose: The Board has submitted an application under the *Water Act* to divert and supply water to landowners and communities within the Special Areas.

- *Red Deer River Watershed Public Advisory Committee (WPAC)*
  - There is a proposal to create a WPAC in the Red Deer River Basin.

Old Man River Basin

- *Oldman Watershed Council*
  - The Oldman Watershed Council was formed in September 2004, when the Oldman River Basin Water Quality Initiative merged with the Oldman Basin Advisory Council.
  - The council focuses on five key areas:
    - Provide information and input into water management planning activities that reflect the needs of stakeholders in the Oldman Watershed.
    - Increase awareness and understanding of the Oldman Watershed among residents and stakeholders and encourage commitment and responsibility for water quality and water use.
    - Refine and expand knowledge of water-related conditions and processes throughout the watershed.
    - Promote sustainable land use practices that protect the watershed.
    - Reduce contaminants, such as microbes, nutrients and pesticides, entering surface water and groundwater in the watershed.
  - Members include: Chinook Health Region; Agriculture, Food and Rural Development; Alberta Environment; Alberta Cattle Feeders' Association; Agriculture and Agri-Food Canada; Alberta Cattle Commission; Alberta Health; Alberta Irrigation Projects Association; Alberta Pork Producers; Canbra Foods; City of Lethbridge; County of Lethbridge; Health Canada; Oldman River Intermunicipal Service Agency; Prairie Farm Rehabilitation Administration; Southern Alberta Environmental Group; University of Lethbridge.

- *C5 Forest Management Plan (underway)*
  - Lead: Alberta Sustainable Resource Development
  - Purpose: The C5 Forest Management Plan's purposes are to:
    - Identify goals that define the preferred future forest and the objectives and strategies (operational activities) required to manage the forest area on a sustainable forest management basis.
    - Recognize resource values, uses, and activities, including Aboriginal uses, on the landscape within the framework of the Alberta Advantage.
    - Identify sustainable timber harvest levels (Annual Allowable Cut) for a period equivalent to two forest rotations.
    - Provide the context for the development of Regional Timber Harvest Planning and Operating Ground Rules that are to be produced before 2006
  - Objectives include reducing impacts on the watershed from forest harvesting, road building, and reclamation.

- *Castle River Access Management Plan (underway)*
  - Lead: Alberta Sustainable Resource Development
  - Purpose: The purpose of this plan is to address and provide operational-level direction for the recreational use of on- and off-highway vehicles in the Castle River sub-region. The plan provides a mapped system of routes and trails specifically for that use. The plan may have the incidental benefit of reducing impacts on the watershed from erosion caused by off-road vehicle use

<u>South Saskatchewan River Sub-basin</u>

No water management initiatives are currently underway in this sub-basin.

Appendix C

Issues Not Considered in the Planning Process

A number of issues were outside the scope of the SSRB planning process. These issues included the following:

- Climate change
  Climate change was not considered due the absence of "high-confidence" research conclusions on future water supply and demand that may result from climate change. After the SSRB planning process began, a major climate change research initiative for the SSRB commenced. Results of this initiative are expected in 2006.

- Water storage
  Water storage as a possible solution to water supply issues was not considered as this issue may be addressed by the WPACs in their watershed management planning initiatives.

- Forced reductions in allocations
  A premise of the SSRB water management planning process was that no licence would be cancelled for the sole reason of accomplishing recommended plan outcomes.

- WCOs upstream of major dams and diversions
  These WCOs were not seen as a priority.

- Non-point source and point source pollution issues
  These issues are better addressed within smaller-scale watershed management plans. Water quality variables considered in the plan were those that are flow dependent (i.e., dissolved oxygen and temperature) as they affect fish and ammonia downstream of wastewater treatment plants. Other forms of pollution such as metals and chemicals are best controlled at the source.

- Number of households or dugouts per parcel
  This is a suitable topic for smaller scale watershed management plans. Ministerial Order 4/99 presently limits the number of households per parcel of land to three.

- Groundwater
  The planning process focused on surface water issues. Groundwater that is not hydraulically connected to surface water is not considered in this plan.

Appendix D

Summary of the Information Assembled as Part of the Planning Process

This section describes the key information considered during the planning process, including a number of studies specifically prepared to support the process.

Legislation

- The *Water Act*
- *Water (Ministerial) Regulation* (Alberta Regulation 205/98).
- *South Saskatchewan Basin Water Allocation Regulation* (Alberta Regulation 307/1991):
  - has the effect of capping the amount of water that can be allocated to irrigation (by stating areas for which maximum water allocations have been determined) for irrigation districts, private irrigation, and a number of possible irrigation projects, if applications are made
  - does not allocate water or establish a priority date for the projects
  - irrigation area expansion limits for irrigation districts are now incorporated into the *Irrigation Districts Act.*
- *Irrigation Districts Act*
- *Fisheries Act* (federal)

Policies

- *Water Management Policy for the South Saskatchewan River Basin* (1990)
  - Provides six general policies for water management in the SSRB
- *The Framework for Water Management Planning*
- *Water For Life: Alberta's Strategy for Sustainability*
- *Approved Phase One Water Management Plan for the South Saskatchewan River Basin*
  - Authorized water allocation transfers and water conservation holdbacks,
  - provided recommendations to the Director on use of water allocation transfers and water conservation holdbacks, and
  - provided recommendation to the Director to stop accepting applications for new allocations of water from the St. Mary, Belly, and Waterton rivers.

Licences for Dam Operations

- Licences for dams owned and operated by Alberta Environment: Oldman River, Waterton-St. Mary Headworks Project, Dickson Dam.

Existing Instream Objectives

- Existing instream objectives and WCOs (as described in Appendix 'E').

International and Interprovincial Water-sharing Agreements

- The *Master Agreement on Apportionment*
- The *Boundary Waters Treaty*

Background Studies for the Planning Process

- Water Demand and Consumption
  - South Saskatchewan River Sub-basin Contributions to International and Interprovincial Water-sharing Agreements (Alberta Environment, 2002b)
  - South Saskatchewan River Basin Water Allocation (Alberta Environment, 2003a)

- South Saskatchewan River Basin Non-irrigation Water Use Forecasts (Hydroconsult EN3 Services Ltd., 2002)
- South Saskatchewan River Basin: Irrigation in the 21st Century. Volume 1: Summary Report (Irrigation Water Management Study Committee, 2002)

- Aquatic Environment
  - Instream Flow Needs Determinations for the South Saskatchewan River Basin (Clipperton et al, 2003)
  - Report on Strategic Overview of Riparian and Aquatic Condition of the South Saskatchewan River Basin (Golder Associates, 2003)

- Water Balance Modeling
  - South Saskatchewan River Basin, Water Management Plan, Phase 2, Scenario Modelling Results, Part 1 (Alberta Environment, 2003c)

- Recreation
  - Recreation Flows for the Bow River and its Tributaries, Alberta, 2002. George, C., W. Tymensen and S. B. Rood. Report for Alberta Environment. Lethbridge, Alberta.
  - Recreation Flows for Paddling Along Rivers in Southern Alberta, 2001. Rood, S. B., and W. Tymensen. Report for Alberta Environment. Lethbridge, Alberta.
  - Recreation Flows for the Red Deer River, Alberta, 2002. Rood, S. B., C. George and W. Tymensen. Report for Alberta Environment. Lethbridge, Alberta.

Appendix E

Existing Instream Objectives (IOs) and Water Conservation Objectives

Red Deer River Basin

On the mainstem reaches from Dickson Dam to the Saskatchewan border, the following IOs have been applied:

- 8.50 m^3/s (300 ft^3/sec) for irrigation licences
- 4.25 m^3/s (150 ft^3/sec) for non-irrigation licences.

Bow River Basin

There are five mainstem reaches from Ghost Reservoir to Bassano Dam:

- Ghost Reservoir outlet to Bearspaw Reservoir outlet,
- Bearspaw Reservoir outlet to Elbow river confluence,
- Elbow river confluence to Highwood River confluence,
- Highwood River confluence to Carseland weir, and
- Carseland weir to Bassano dam.

Each reach has an IO, which is based on a relationship known as the 80 per cent habitat fish rule curve. The IOs in these reaches are based on habitat only and do not include water quality (temperature and dissolved oxygen) protection parameters.

The reach below Bassano to the mouth has three IO values:

- 39.6 m^3/s (1,400 ft^3/sec) for all licences except the Eastern Irrigation District (EID);
- 2.83 m^3/s (100 ft^3/sec) for EID's 1963 licence (1903 priority);
- 11.3 m^3/s (400 ft^3/sec) for EID's 1998 licence.

Oldman River Basin

There are six mainstem reaches from the Oldman Reservoir to the mouth:

- Oldman Reservoir outlet to Pincher Creek confluence,
- Pincher Creek confluence to the Lethbridge Northern Irrigation District (LNID) weir,
- LNID weir to Willow Creek confluence,
- Willow Creek confluence to Belly River confluence,
- Belly River confluence to St. Mary River confluence, and
- St. Mary River confluence to Mouth.

Each reach has an IO that is the greater of the 80 per cent habitat fish rule curve (80 FRC) or the water quality (temperature and oxygen) protection IO flows.

The three Southern Tributaries to the Oldman River each have WCOs established. They are:

- 2.27 m^3/s (80 ft^3/sec) for the Waterton River at the mouth;
- 0.93 m^3/s (33 ft^3/sec) for the Belly River below the Belly River Diversion,
- 2.75 m^3/s (97 ft^3/sec) for the St. Mary River at the mouth.

South Saskatchewan River Sub-basin

From the confluence of the Bow and Oldman rivers to the Saskatchewan border, an IO of 42.5 m^3/s (1,500 ft^3/sec) is attached to licences.